CLAIMS

[Claim 1] A beam-column joint structure comprising:

a column having a column main body formed of an I-beam for columns, a square steel tubing, or a weld assembled box cross-section; and

a beam having an I-beam for beams in which a pair of beam flanges of the I-beam for beams are directly joined to joint plates of the column main body through welded section,

wherein the joint plate is a column flange of the I-beam for columns, or a flat plate part of the square steel tubing or the weld assembled box cross-section,

when a position where a central axis of the column main body intersects with a central axis of the I-beam for beams is defined as an intersect position,

a ratio of a full plastic strength of the column to a full plastic strength of the beam at the intersect position is 1.5 or more and 3.0 or less,

a ratio of a full plastic strength of the beam to a full plastic strength of a portion, that is within a range of a height of the beam in a vertical direction, of a column web of the column main body formed of the I-beam for columns or a joint part panel which is the flat plate part extending along a longitudinal direction of the beam in the column main body formed of the square steel tubing and the weld assembled box cross-section at the intersect position is 1.05 or more and 1.5 or less, and

when energy acts on a joint part between the column and the beam, the joint part panel yields, and following the increase in strength of the joint part panel due to yielding, the beam yields, the energy is absorbed by both the beam and the joint part panel.

[Claim 2] The beam-column joint structure according to claim 1, further comprising:

a backing bar joined to each of a lower flange disposed on a lower side of the pair of beam flanges and the joint plate through the welded section,

wherein the backing bar is attached below the lower flange,

a bevel is formed on an upper surface of the backing bar so as to be directed downward gradually as approaching the joint plate, and

the welded section is also formed in the bevel.

[Claim 3] The beam-column joint structure according to claim 1 or 2,

wherein Charpy absorbed energy $vE_{-20(S)}$ in a plate thickness direction of the joint plate at -20°C is 35 J or more.

[Claim 4] The beam-column joint structure according to any one of claims 1 to 3,

wherein Charpy absorbed energy $vE_{0(S)}$ in a plate thickness direction of the joint plate at 0°C is 47 J or more.

[Claim 5] The beam-column joint structure according to any one of claims 1 to 4,

wherein a first reinforcement plate disposed at the same position as the pair of beam flanges in the vertical direction and joined to the column main body is not provided.

[Claim 6] The beam-column joint structure according to any one of claims 1 to 5,

wherein a second reinforcement plate joined to the column web or the flat plate part to increase a thickness of the column web or the flat plate part is not provided.